

REMARKS

The Official Action dated December 3, 2003 has been carefully considered. Applicants acknowledge Examiner's withdrawal of the 35 U.S.C. § 103 rejection over U.S. Patent No. 5,698,505 to Ofosu-Asante ("Ofosu"), in view of WO No. 95/00117 to Surutzidis et al. ("Surutzidis"). The following remarks refine and clarify the arguments of the Applicants and are believed sufficient to overcome the remaining rejections and to place the present application in condition for allowance. Reconsideration is respectfully requested.

35 U.S.C. § 103

Claims 12-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over WO 95/00117 to Surutzidis ("Surutzidis") in view of U.S. Patent No. 5,698,505 to Ofosu-Asante et al ("Ofosu"). The Examiner indicates that both Surutzidis and Ofosu are being relied upon as set forth in Paper # 19. Accordingly, the Examiner re-asserts that Surutzidis teaches liquid detergent compositions containing branched anionic surfactants, which are low-sudsing. The Examiner further asserts that the Surutzidis compositions comprise a "Guerbet anionic surfactant", which is "low in sudsing due to branching," and is present at levels from 1 to 70% by weight of the total detergent. Moreover, the Examiner asserts that Surutzidis specifically teaches the use of a branched C₁₂-C₁₅ alkyl 3EO sulfate, available under the trade name LIAL C₁₂-C₁₅, and that the detergent compositions may also contain non-Guerbet anionic surfactants in amounts from 1% to 40% by weight, including alkyl alkoxylated sulfate surfactants containing a metal cation such as magnesium. The Examiner asserts that the secondary reference, Ofosu teaches the advantageous grease cutting properties to similar dishwashing detergent compositions when using magnesium ions. The Examiner concludes that it therefore would have been obvious to one of ordinary skill in the art to use the

magnesium ions of Osofu in the compositions of Surutzidis. This rejection is traversed and reconsideration is respectfully requested.

The present invention, as defined broadly by independent claim 12, is directed to an aqueous liquid detergent composition comprising from about 30% to 70% water by weight, from 0.1% to 2% magnesium ions by weight, and a surfactant mixture. The surfactant mixture comprises: a) an alkyl alkoxy sulfate (hereinafter "AAS") surfactant of the formula $R_1O(A)_xSO_3M$, where R_1 is an alkyl or alkenyl group having 9 to 16 carbon atoms, A is either an alkoxy group, x represents 0.5 to 3 in average, and M is a member selected from the group consisting of alkali metals, alkali earth metals, ammonium and alkanolammonium, and b) 0.5% to 10% of an amine oxide surfactant. From 20% to 60% by weight of the total AAS comprises an alkyl alkoxy sulfate wherein R_1 is branched such that the composition provides sudsing.

The instant inventive compositions comprise water, magnesium ions and both branched and linear AAS's in specified proportions as required by claim 12, and not merely the presence of AAS's. In fact, the present specification discloses that the combination of AOs and AAS's is well known in the detergent arts, but is subject to stability problems at low temperatures which results in an undesirable white precipitate. The instant specification further discloses that this problem is exacerbated in compositions comprising cations such as magnesium, and in compositions which are formulated as clear liquids. Neither Osofu nor Surutzidis teach compositions that require both linear and branched AAS's in specific proportions, and neither recognize this solution to the low-temperature stability problem which makes this combination desirable.

The instantly recited parameter of between 20% and 60% for the branched AAS percentage range is based on the instant inventors' discovery that the sudsing performance of

the detergent product deteriorates unacceptably when the percentage of branched AAS's is greater than 60, yet that some minimum amount of branching is required to achieve the desired low temperature stability (page 5, para 2). This minimum value is taught to be ascertainable by plotting stability of a given matrix at the desired temperature as a function of the proportion of branched material (page 5, para. 2). It is disclosed that generally, however, branched AAS's should be present in amounts of at least 20% by weight of the total AAS (id.).

The primary reference, Surutzidis, fails to teach the branched AAS's required by the instantly recited formulations, and fails to disclose any exemplar formulations which reflect, either intentionally or inherently, the percentages of branched and linear AAS's required by the instant claims. The Examiner is correct in that Surutzidis does teach branched "Guerbet" surfactants, which are disclosed to be alkyl sulfates or sulfonates (page 3, paras 1-2). In fact, Surutzidis teaches that the Guerbet surfactants "are *low* sudsing due to the branching" (emphasis added). Applicants note that this is directly contrary to the present teachings with respect to branched AAS's, which are taught to promote and facilitate sudsing for applications which require higher sudsing. Applicants therefore strongly emphasize that the branched anionic "Guerbet" surfactants of Surutzidis, which are not the same chemically as the presently recited AAS's, are not the functional equivalents either.

The fact that even Surutzidis considers the Guerbet surfactants substantively distinguishable from the AAS's is evidenced by the placement of the Surutzidis discussion of AAS's in a separate paragraph from the discussion of the Guerbet surfactants, and by Surutzidis's use of the phrase "***another*** anionic surfactant suitable for use herein..." when introducing AAS's as optional composition ingredients (page 4, para 3). Significantly, with respect to the optional AAS's, Surutzidis limits that option to linear AAS's "wherein R is an

unsubstituted C₁₀-C₂₄ alkyl or hydroxylalkyl group..." (page 4, para 3). Applicants further note that in the Surutzidis Examples on page 10, branched AAS's (second ingredient) are listed separately from the branched alkyl sulphates which are the Guerbet surfactants (first ingredient). Applicants also stress that none of the examples comprise branched AAS's, with the exception of example "E", which is a comparative example. The percentage, however, appears to exceed the presently claimed 60% ceiling, since the branched form is the only AAS and thus constitutes virtually 100% of the total AAS's.

The Examiner appears to make the argument that example "E" falls within the scope of the present inventive claims, stating that Surutzidis discloses that the source of this ingredient is Lial®, which the Examiner asserts to be the same as that presently used. Applicants point out, however, that in the present specification, a disclosure of, e.g., 30% branching is arrived at by manipulating proprietary formulations. Surutzidis merely states that the branched C₁₂-C₁₅ alkyl 3EO sulphate is a Lial® C₁₂-C₁₅ alkyl ethoxy sulphate Na salt *prepared from* the Lial® C₁₂-C₁₅ alcohol. Applicants fail to find support for the Examiner's conclusory assertion that when Surutzidis discloses an ingredient as a branched AAS constituting 25% of a composition, they actually mean a 60% branched AAS constituting 25% of the composition. For the Examiner to assert that they really intend something other than the plain meaning of "25% branched", in the absence of any support, is inappropriate. Lial® is the proprietary name for a large number of alcohols and their derivatives, as well as specially prepared compounds. It is impossible for the Examiner to know the precise compound from the general description provided at page 10, which merely designates the AAS a derivative of a Lial® alcohol. Unless Surutzidis specifically discloses a percentage to the contrary, Applicants contend that the plain meaning of Surutzidis's own descriptions of their ingredients govern.

Moreover, the Examiner's contention that it would have been obvious to add the magnesium of Ofosu to the compositions of Surutzidis in order to achieve the present inventive compositions ignores the fact that Surutzidis is directed to low-sudsing detergents while Ofosu is directed to high-sudsing liquid hand-washing detergents. Significantly, both Ofosu and the present disclosure teach that the role of magnesium in the respective compositions is to *improve* sudsing (page 6, para 3). While the hindsight afforded by the success of the instant inventive compositions comprising magnesium arguably makes it obvious that adding the magnesium to Surutzidis will provide more sudsing to the Surutzidis detergents, there is no suggestion in Surutzidis of the desirability of doing so. In fact, Surutzidis teaches away from high-sudsing and discloses that its compositions are intended for applications which require low-sudsing activity, such as machine washing.

In addition, Ofosu explicitly teaches that formulating compositions which comprise divalent ions such as magnesium is difficult due to the incompatibility of the divalent ions, "particularly magnesium," with hydroxide ions (column 6, lines 49-52). Applicants draw attention to Surutzidis at page 10 which discloses that all the exemplar compositions are formulated with the pH adjusted to 7.5-9 with NaOH. Clearly, the compositions of Surutzidis are alkaline and the addition of magnesium is not only non-obvious, but taught as difficult by Ofosu, without additional formulative modifications. A person of ordinary skill in the detergent arts would be discouraged from making the combination of Ofosu and Surtuzidis by the explicit teachings of Ofosu.

To establish prima facie obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art, *In re Royka*, 490 F.2d at 981, 180 U.S.P.Q. at 580. It is error to find obviousness where references diverge from and teach away from the invention at hand. *In re Fine*, 5 U.S.P.Q.2d at 1599. Since neither reference

teaches or suggests both linear and branched AAS's in the instantly specified proportions, the combination does not render the present invention obvious. Further, since the primary reference is directed to composition ingredients which inhibit sudsing, while the secondary reference is directed to compositions which promote sudsing, a combination motivated by similar purpose is not suggested. In addition, the combination is *explicitly* taught by Ofosu to be incompatible, as the magnesium ions of Ofosu would cause unacceptable storage instability and hydroxide precipitates in the alkaline Surutzidis compositions. Hence, the present inventive compositions are nonobvious over Surutzidis in view of Ofosu and the rejection under 35 USC 103(a) of claims 12 - 20 is overcome. Reconsideration is respectfully requested.

Non-statutory Double Patenting

Claims 12-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent No. 5,698,505 to Ofosu. The Examiner asserts that although the claims are not identical, they are not patentably distinct from each other because claims 1-6 of '505 in combination with WO 95/00117 (Surutzidis) encompass the material limitations of the instant claims.

This rejection is traversed and reconsideration is respectfully requested. The present invention as broadly defined by independent claim 12 and detailed *supra*, is directed to detergent compositions comprising, inter alia, from 0.1% to 2% magnesium ions by weight, and a surfactant mixture. The surfactant mixture comprises: a) an AAS surfactant of the formula $R_1O(A)_xSO_3M$, where R_1 is an alkyl or alkenyl group having 9 to 16 carbon atoms, A is an alkoxy group, x represents 0.5 to 3 in average, and M is a member selected from the group consisting of alkali metals, alkali earth metals, ammonium and alkanolammonium, and b) 0.5% to 10% of an amine oxide surfactant. From 20% to 60% by weight of the total AAS

comprises an alkyl alkoxy sulfate wherein R_1 is branched *such that the composition provides sudsing*.

Ofosu, on the other hand, teaches compositions comprising, *inter alia*, non-specific anionic alkyl sulfates, including AAS's. However, Applicants are not claiming the mere inclusion of alkyl alkoxy sulfate surfactants in their inventive detergent compositions. Rather, Applicants' claims are based on their discovery that formulations mandating specific proportions of branched and unbranched AAS's as claimed provides a means of stabilizing the compositions at low temperatures, a means that was heretofore unknown. Ofosu, in fact, addresses the temperature-based stabilization issues by suggesting particular alkylpolyethoxypolycarboxylate-containing compositions, balanced for degrees of carboxylation and ethoxylation to yield a desired hydrophilicity range that confers the desired stability (see, e.g., Col. 18, lines 3-8.) Other than their typical inclusion as a preferred anionic surfactant, Ofosu does not teach or otherwise suggest the importance or effect of controlling the total AAS structural characteristic profile in order to confer the desired low temperature stability. Applicants submit that the rejection overlooks both the existence and significance of the proportion limitation.

The broad teachings of a reference cannot preclude establishment of unobviousness for a specifically claimed invention not anticipated by the reference. *In re Orfeo*, 169 USPQ 487 (CCPA 1971). *In re Waymouth*, 182 USPQ 290 (CCPA 1974). *In re Meyer*, 202 USPQ 175 (CCPA 1979). Applicants submit that the broad disclosure of Ofosu of the genus of AAS's for typical use as anionic surfactants, does not render the presently claimed specific proportions of linear and branched AAS's obvious. Applicants also submit that the empirical evidence they have submitted, i.e. the clarity of the inventive compositions based on this

proportion, distinguishes their invention over Ofosu. (See application specification at pages 14 and 15).

Further, Applicants submit that Surutzidis does not address or eliminate this deficiency in the primary reference. Surutzidis simply does not recognize the functional role of branched AAS's, since the Surutzidis compositions are intended for applications which require reduced sudsing, and branched AAS's provide enhanced sudsing. Surutzidis does teach the optional addition of AAS's, which is not surprising given their ubiquitous presence in detergent compositions in general, however, Surutzidis is silent with respect to the percentage of total AAS which is branched or linear. Applicants point to examples A-E at page 11 of Surutzidis and note that the alkyl sulfate and AAS ingredients are designated as being either branched or linear, and, significantly, not a single example includes both branched and linear AAS's. Hence, in addition to there being an absence of any motive to combine the two references, even the combination itself is deficient in that it does not teach all the limitations of the present inventive detergent compositions.

The difference between the linear and branched architecture of the AAS with respect to improving the stability of high-sudsing detergents goes to the very heart of the instant invention, i.e., Applicants have discovered that certain architectural proportions confer a stability heretofore unrecognized in the art. The failure of either Ofosu or Surutzidis to recognize any difference in efficacy between the branched and linear AAS's with respect to stability highlights the patentable novelty of the present inventive compositions over the combination of Ofosu in view of Surutzidis.

To establish *prima facie* obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art, *In re Royka, supra*. It is error to find obviousness where references diverge from and teach away from the invention at hand. *In re*

Fine, supra. Since the references fail to provide a suggestion to combine their respective elements along the lines of the present invention, and because there is no inherent motivation to make such a combination, and, further, irrespective of this, the references, alone or in combination, fail to disclose an important requisite element of the present inventive compositions, the present invention is not rendered obvious by Ofosu in view of Surutzidis. Specifically, the combination fails to teach compositions comprising both linear and branched AAS's in specified proportions. Hence, the present inventive compositions are not rendered obvious by the combination and the rejection of claims 12-18 under the nonstatutory obviousness-type double patenting basis is overcome. Reconsideration is respectfully requested.

It is believed that the above represents a complete response to the Examiner's rejections under 35 U.S.C. § 103, and non-statutory double patenting and places the present application in condition for allowance. Reconsideration and an early allowance are requested.

Respectfully submitted,



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